NUCLEAR ENERGY RESEARCH INITIATIVE

Development of Acetic Acid Removal Technology for the UREX+ Process

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Collaborators: Oak Ridge National Laboratory

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Program Area: Advanced Fuel Cycle Initiative

Project Description

The focus of this proposal is to select and scientifically verify the most appropriate technology to separate acetic acid from the strip solution of the UREX+ process. Specifically, this technology will separate the acetic acid and recover nitric acid so that it can be recycled and reused in the process. Leading technologies will be screened on the basis of rudimentary estimates, including economics, safety, development time, health, and environmental metrics. The candidate technologies will include distillation, extraction, crystallization, and chemical reaction. Flowsheets will be developed for the two best technologies selected in the initial screening studies. These technologies will be subjected to more rigorous comparison based on the above metrics. A bench-scale evaluation of the most appropriate technology will demonstrate process viability. Reports for each phase will document the development activities and provide a plan for applying this technology.

Workscope

Following is a summary of the principal tasks involved in this project:

- Selection and screening of leading technologies
- In-depth analysis of leading technology including development of flowsheets
- Experimental verification of selected technology